

WHAT IS CLAIMED IS:

1. A virtual access router having an LNS function or LAC function comprises:

a plurality of communication I/Fs to transmit and receive packets;

a plurality of first logical interfaces associated with the communication I/Fs to transmit and receive packets to and from user terminals;

a plurality of second logical interfaces associated with the communication I/Fs to transmit and receive packets to and from backbone networks;

routing information tables managed by virtual routers and storing routing information; and

a means to associate one of the virtual routers to one of the first logical interfaces and to one of the second logical interfaces;

wherein packets received from the first logical interface are forwarded to one of the second logical interfaces associated with the virtual router according to the routing information table corresponding to the virtual router associated with the first logical interface.

2. A virtual access router according to claim 1, further comprising:

a L2TP LAC function;

wherein a communication I/F to transmit and receive one of PPP frames assigned among the communication I/Fs or a logical interface corresponding

to one of PPP sessions is the first logical interface;

wherein an interface to transmit and receive L2TP packets is the second interface;

wherein the L2TP LAC function operates in each of the virtual routers.

3. A virtual router according to claim 1, further comprising:

a L2TP LAC function; and

a function to terminate a plurality of L2TP tunnels;

wherein a logical interface corresponding to one of the L2TP tunnels is the first logical interface;

wherein an interface to transmit and receive L2TP packets is the second logical interface;

wherein the L2TP LAC function associates each of PPP sessions from a user terminal with the corresponding first logical interface.

4. A virtual access router according to claim 1, further comprising:

a L2TP LNS function;

wherein a communication I/F to transmit and receive L2TP packets assigned among the plurality of communication I/Fs or a logical interface corresponding to one of L2TP tunnels is the first logical interface;

wherein an interface to transmit and receive packets to and from backbone networks is the second interface;

wherein the L2TP LNS function operates in

each of the virtual routers.

5. A virtual access router according to claim 1, further comprising:

a L2TP LNS function;

wherein a logical interface corresponding to one of received PPP sessions is the first logical interface;

wherein an interface to transmit and receive IP packets to and from backbone networks is the second logical interface;

wherein the L2TP LNS function associates each of the PPP sessions multiplexed to a L2TP tunnel with the corresponding first logical interface.

6. A virtual access router according to claim 1, wherein the association means is realized by one of the virtual routers.

7. A virtual access router according to claim 1, wherein a correspondence between the first logical interfaces and the virtual routers and the correspondence between the second logical interfaces and the virtual routers can be changed by a control command received by one of the communication I/Fs.

8. A virtual access router comprising:

a plurality of communication I/Fs to connect to external communication lines;

a processor to execute predetermined processing on packets transmitted and received through the terminal; and

a memory to store reference information used to execute predetermined processing on received packets;

wherein the memory stores:

physical interface identifiers or logical interface identifiers of the received packets and an interface table holding a relation between the interface identifiers and virtual router identifiers; and

a routing information table holding routing information to be processed by routers corresponding to the virtual router identifiers;

wherein the processor refers to the interface table and identifies an identifier of a virtual router that is to process the received packets and

reads from the routing information table routing information managed by the virtual router corresponding to the virtual router identifier and forwards the received packets.

9. A virtual access router according to claim 8, wherein the interface table and the routing information table are stored in different memories.

10. A virtual access router according to claim 8, wherein L2TP tunnel identifiers, PPP session identifiers or identifiers of Internet service providers connected through external communication lines are used as the logical interface identifiers.

11. A virtual access router according to claim 8,

wherein port numbers of the plurality of communication I/Fs are used as the physical interface identifiers.

12. A virtual access router according to claim 8, further comprising a LAC function or LNS function.

13. A virtual access router according to claim 12, wherein

the memory stores a sequence for generating L2TP tunnels and a sequence for terminating the L2TP tunnels corresponding to received packets, and

the processor reads and executes any of the sequences to realize the LAC function and LNS function.

14. A virtual access router according to claim 12, further comprising a means for switching between the LAC function and the LNS function.

15. A virtual access router according to claim 13, wherein the processor has a setting means for determining which of the sequences is to be read, and switches between the LAC function and the LNS function by the setting means.

16. A virtual access router according to claim 8, further comprising:

a program memory storing a program, the program being intended to analyze contents of management control commands received by the communication I/Fs;

wherein the processor executes the management control commands to authorize, according to a contract, control command sources to change settings in the

interface tables corresponding to all the virtual routers.

17. A virtual access router according to claim 16, wherein

the processor executes the management control commands to authorize a particular control command source to change settings in the interface table corresponding to a particular virtual router.

18. A business mode using the virtual access router according to claim 17, wherein

a communication carrier who owns or manages the virtual access routers associates interfaces connecting to networks of other communication carriers with particular virtual routers and transfers to the other communication carriers authorities to use management control commands corresponding to the virtual routers.